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Pulpwood Production in Lake States Counties, 1961

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PLEASE NOTE

This report is the last of the Station Paper Series by the Lake States Forest Experiment Station. In January 1963, a new series will begin called the "U. S. Forest Service Research Paper" series. Papers in this series originating at the Lake States Station will be designated with "LS" preceding the number.

ABOUT THIS REPORT

Timber cutting rates vary from year to year. Frequent measurement is required to maintain a current, meaningful picture of the balances between timber cut, timber growth, and desirable cut. To partially meet this need the Station publishes summaries of the output of various timber products as often as reliable data can be accumulated. Reports of pulpwood output by States have been published each year since 1946.

This is the third report on pulpwood cut by counties in the Lake States Region (see maps following this page). All of the 60 pulpmills using Lake States timber in 1961 furnished figures on their wood receipts by State and county of origin. Their help is gratefully acknowledged. Thanks are due also to Ray Pfeifer, Forest Survey Coordinator, Michigan Department of Conservation, for collecting data for the Michigan pulpmills.

The volume of timber cut annually varies by areas within States. Although many products are difficult to trace to county of origin, pulpwood origin can be traced with accuracy. Knowing the production of pulpwood, which is a major Lake States product, makes it possible to estimate the production of all products and the resulting timber cut by counties and county groups.

The last section in this report presents, for each Forest Survey district, estimates of the timber cut for **all** products from the six principal pulpwood species. The tables are followed by charts comparing this estimate with the previous year's estimate of timber cut. While not as reliable as the pulpwood production figures, which came from a 100-percent canvass, the total timber cut estimates give an indication of the trend of cutting in these important species.

1961 PULPWOOD BRIEFS

Lake States pulpwood production in 1961 falls short of 1960 cut; hardwood cut goes up. — The pulpwood cut amounted to approximately 3,152,000 cords, 6 percent less than in 1960. Sixty pulpmills obtained wood from the Lake States Region in 1961. Of this total, 52 were local mills, 5 were Central States mills, and 3 were Canadian mills.

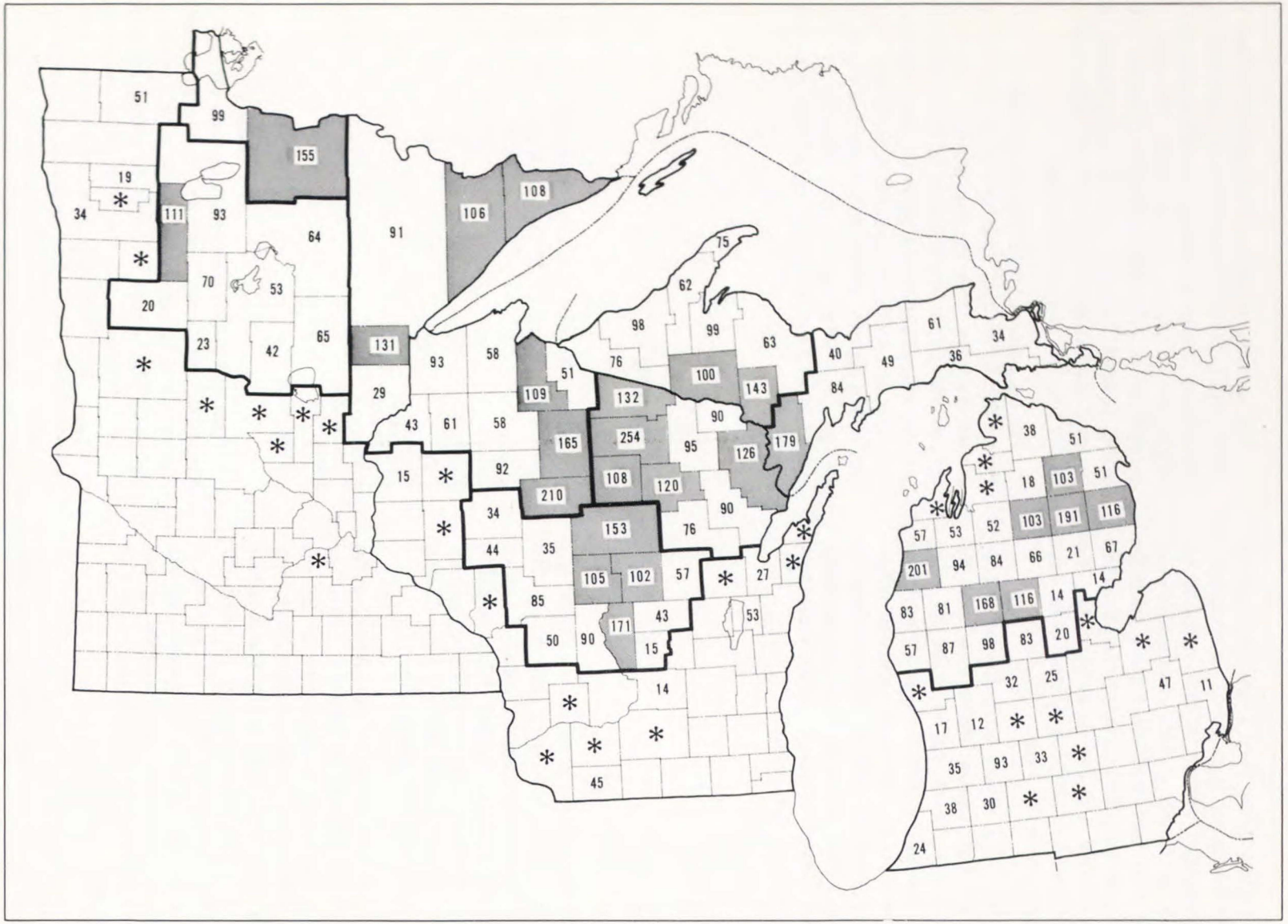
Production of all species except miscellaneous dense hardwoods showed a decrease from the previous year. Dense hardwoods, which in the past were almost ignored as a source of pulpwood, have been gaining favor with local mills. The numbers of mills using the different species of wood for pulping in 1961 are shown below. In number of users aspen was first, followed by spruce and balsam fir. Heavy hardwoods were fourth in the standings, a much higher ranking than they had several years ago.

Number of mills using the various species

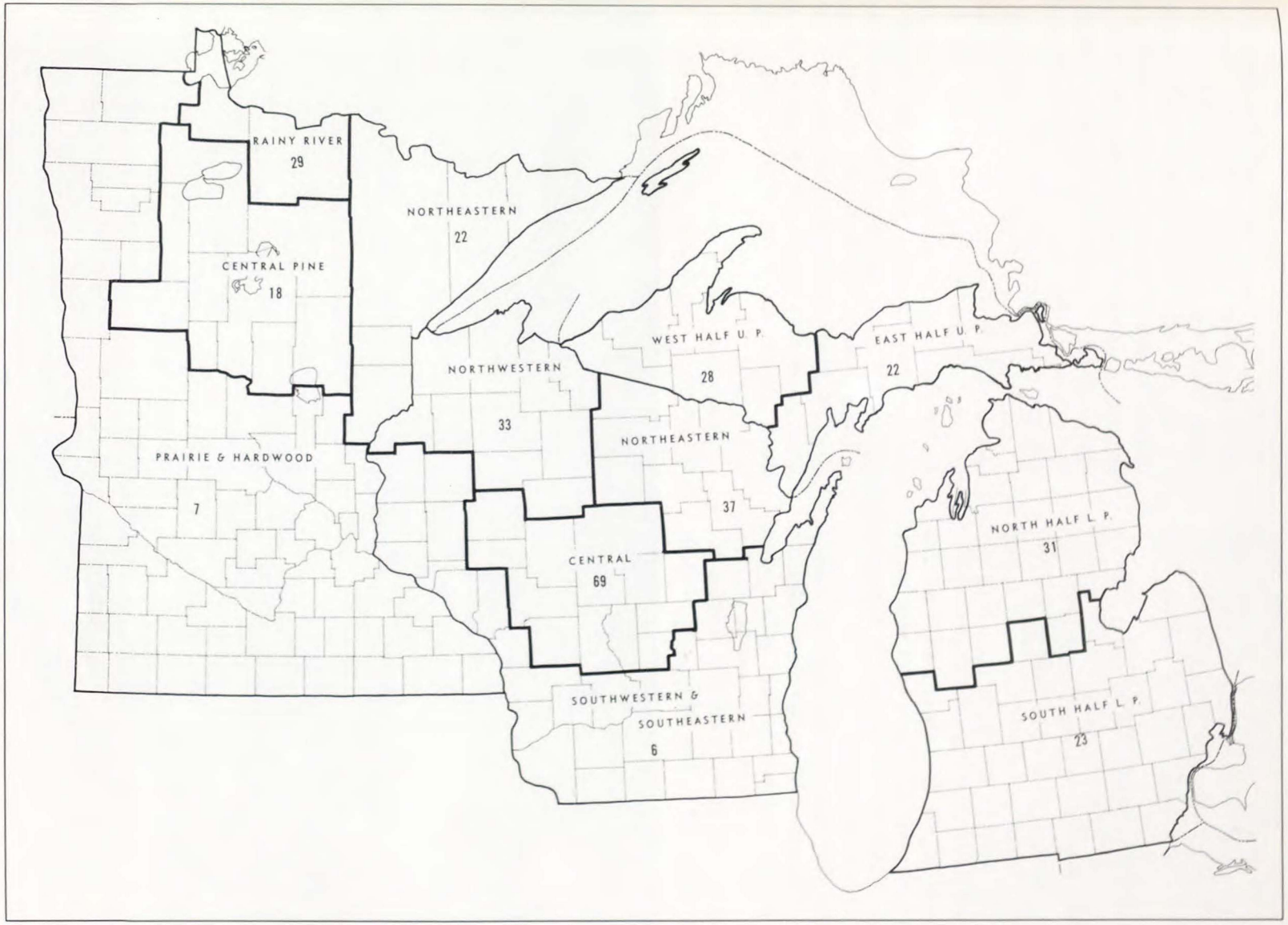
Species used	*Lake States*	*Minnesota*	*Wisconsin*	*Michigan*
Aspen	47	9	27	11
Balsam fir	30	6	18	6
Birch	13	1	10	2
Hemlock	8	..	7	1
Pine	15	6	5	4
Spruce	31	6	19	6
Tamarack	4	..	4	..
Misc. hardwoods	18	2	11	5
Wood chips	3	..	3	..
Slabs, etc.	2	..	2	..
Total mills	52	10	29	13

Minnesota output down slightly; local use up. — Minnesota pulpwood cutters produced about 968,000 cords in 1961, down about 8 percent from last year. The decline was due to a drop in shipments to Wisconsin and Canadian mills. Pulpwood exports to Michigan mills have been almost nonexistent since 1959. The quantity of pulpwood channeled to Minnesota mills was nearly ¾ million cords. A larger proportion of the annual pulpwood cut was retained in the State than ever before.

NOTE: The author, Arthur G. Horn, is Research Forester, Lake States Forest Experiment Station, Forest Service, U. S. Department of Agriculture. The Station is maintained at St. Paul 1, Minn., in cooperation with the University of Minnesota.



Cords of pulpwood cut per 1,000 acres of stocked commercial forest land in the principal pulpwood-producing counties, Lake States, 1961. Cross-hatching shows counties that supplied 100 or more cords of pulpwood per 1,000 acres of stocked commercial forest land. The heavy lines delineate the boundaries of the Forest Survey districts in each State. The asterisk (*) indicates a pulpwood production of less than 10 cords per 1,000 acres.



Cords of pulpwood cut per thousand cords of merchantable volume in principal pulpwood species, by Forest Survey district, 1961.

The Northeastern district continued to be the leading pulpwood producing area in the State, accounting for nearly one-half of the total cut. Minnesota pulpmills obtained more than one-third of their wood requirements from this area in 1961. Aspen, spruce, and pine were the species most heavily cut.

The Central Pine district, which was the second largest pulpwood producing area, cut 11 percent less pulpwood this year than last. Exports to Wisconsin mills declined, but wood used by resident mills remained about the same. This district usually supplies more wood to Minnesota mills than any other district. However, it was second to the Northeastern district in 1961, but only by a small margin. Aspen and pine were the species most heavily cut. Most of the dense hardwoods cut in Minnesota were produced in this district.

The Rainy River district reported a cut slightly below that of last year. Nearly all of the pulpwood produced in this area goes to local mills. Aspen and spruce were the species most heavily cut.

The Prairie and Hardwood districts together cut about 15 percent more than during the previous year. A rise in exports to Wisconsin accounted for most of the increase.

Wisconsin's annual cut continues upward. — The Wisconsin pulpwood cut amounted to approximately 1,078,000 cords, an increase of about 3 percent over last year's output. Of the three Lake States, Wisconsin was the only one showing an increase. Although exports of pulpwood were off slightly, the increase in local demand more than made up the difference. Pine, balsam fir, birch, and spruce made gains over last year.

The increase in pulpwood output was not general throughout the State. The cut of the two northern districts was about 3 percent less than the previous year. Counties showing the greatest declines were Langlade, Lincoln, and Oconto in the northeast, and Bayfield, Burnett, and Douglas in the northwest. Pine production declined sharply, about 34 percent, in the northwestern part of the State. In contrast to the general decline in the north, Oneida and Rusk counties posted rather sizable gains.

Production figures reported for the Central district were considerably larger than those for

1960; the cut was up about 31 percent. Counties with large gains were Adams, Jackson, Juneau, and Monroe. Pine output regained most of its 1960 loss, and dense hardwood output continued to rise. Harvests from forest industry lands helped swell the cut of pulpwood in this general area.

Michigan retains the lead. — Pulpwood production in Michigan amounted to approximately 1,106,000 cords, 11 percent less than in 1960. Michigan's output was only about 20,000 cords greater than Wisconsin's. Both local deliveries and exports were down from the previous year, but the decline in local use was more pronounced.

Upper Michigan reported a cut of 624,000 cords, 10 percent less than for the previous year. Production was off most in the eastern counties, while Baraga, Keweenaw, and Ontonagon showed gains. Wood chip production was up as demand for such material by Wisconsin and Central States mills increased.

Lower Michigan produced 482,000 cords, 12 percent less than in 1960. The cut of aspen and jack pine was down more than that of other species. Dense hardwoods increased sharply. The total pulpwood harvest in Lower Michigan counties was consumed by local mills. Oscoda, Manistee, and Alcona were the top producing counties.

FORECASTS

Wisconsin may well take the lead as the top pulpwood producing State in the Lake States. Currently the trend for Wisconsin pulpmills is to obtain more wood close to home.

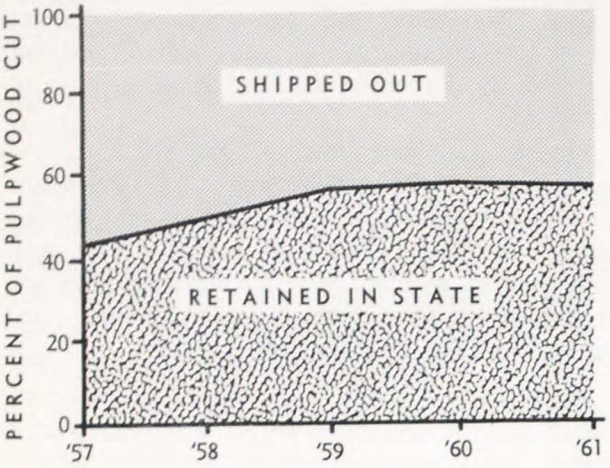
Miscellaneous dense hardwoods and paper birch are expected to constitute a larger proportion of the total pulpwood cut in each of the three Lake States. Wisconsin's hardwood cut has increased substantially; the cut in Michigan and Minnesota is expected to increase but at a slower rate.

Wood chips probably will be used by more Lake States pulpmills. Wisconsin mills have started — some Michigan and Minnesota mills are expected to follow. Most chips will be obtained locally although some will be shipped in from western States.

Tamarack use for pulpwood is expected to increase, especially in Minnesota, where larger volumes of small trees are reaching merchantable size. Hitherto tamarack has been bypassed mainly because of its small size.

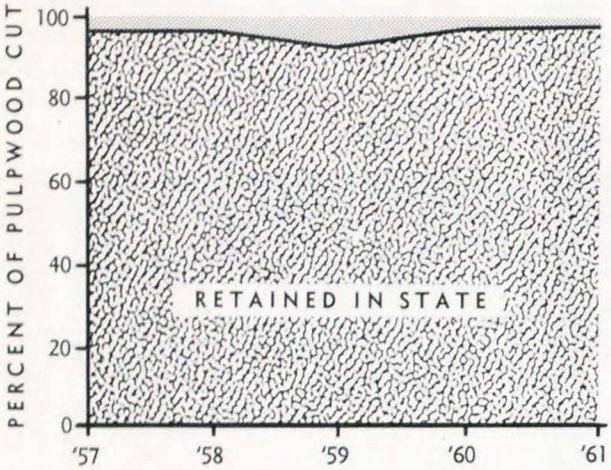
Hemlock pulpwood output is expected to continue on the downward course established a few years ago because of dwindling supply.

PULPWOOD PRODUCTION BY STATE OF ORIGIN AND DESTINATION, PAST FIVE YEARS



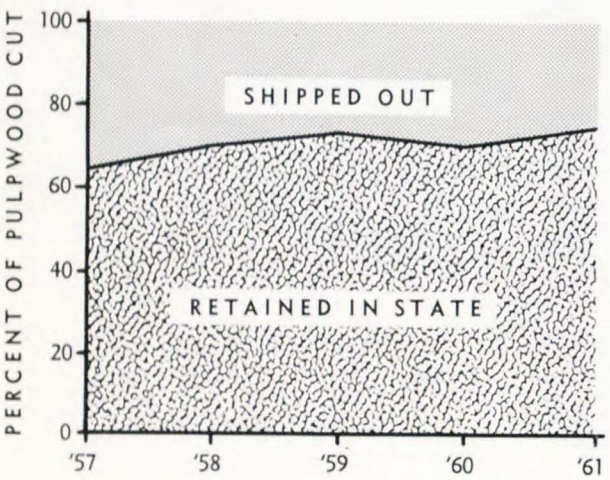
MINNESOTA

Year	Total cut	Destination of pulpwood			
		Minn.	Wis.	Mich.	Other
	(Thousand standard cords)				
1957	1,049	672	368	9	..
1958	903	626	267	7	3
1959	994	721	251	7	15
1960	1,048	711	308	..	29
1961	968	712	240	..	16
5 year average	992	688	287	4	13



WISCONSIN

Year	Total cut	Destination of pulpwood			
		Minn.	Wis.	Mich.	Other
	(Thousand standard cords)				
1957	934	17	911	..	6
1958	828	14	811	..	3
1959	972	21	915	3	33
1960	1,052	19	1,008	..	25
1961	1,078	14	1,050	1	13
5 year average	973	17	939	1	16



MICHIGAN

Year	Total cut	Destination of pulpwood			
		Minn.	Wis.	Mich.	Other
	(Thousand standard cords)				
1957	980	..	553	427	..
1958	900	..	442	458	..
1959	1,053	..	447	603	3
1960	1,237	..	510	727	..
1961	1,106	..	464	628	14
5 year average	1,055	..	483	569	3

PULPWOOD PRODUCTION BY FOREST SURVEY DISTRICTS AND DESTINATION BY STATES, 1961

MINNESOTA

District	Total cut	Destination of pulpwood			
		Minn.	Wis.	Mich.	Other
		(Thousand standard cords)			
Northeastern	461	257	192	..	12
Central Pine	290	250	40	..	..
Rainy River	195	187	4	..	4
Hardwood and Prairie	22	18	4	..	..
Total	968	712	240	..	16

WISCONSIN

District	Total cut	Destination of pulpwood			
		Minn.	Wis.	Mich.	Other
		(Thousand standard cords)			
Northeastern	458	..	454	1	3
Northwestern	403	14	387	..	2
Central	203	..	201	..	2
Southeastern & Southwestern	14	..	8	..	6
Total	1,078	14	1,050	1	13

MICHIGAN

District	Total cut	Destination of pulpwood			
		Minn.	Wis.	Mich.	Other
		(Thousand standard cords)			
E. ½ Up. Pen.	244	..	172	72	..
W. ½ Up. Pen.	380	..	292	74	14
N. ½ Low. Pen.	450	..	..	450	..
S. ½ Low. Pen.	32	..	..	32	..
Total	1,106	..	464	628	14

PULPWOOD PRODUCTION BY SPECIES AND FOREST SURVEY DISTRICTS FOR SPECIFIED YEARS

MINNESOTA[1]

(Thousand standard cords, roughwood basis)

Species and district	Annual cut			
	1952	1959	1960	1961
ASPEN:				
Northeastern	105	119	150	152
Central Pine	107	169	158	137
Rainy River	52	86	77	74
Prairie & Hardwood	6	7	7	6
Total	270	381	392	369
BALSAM FIR:				
Northeastern	52	59	62	47
Central Pine	62	40	49	35
Rainy River	41	30	33	29
Prairie & Hardwood	8	1	1	*
Total	163	130	145	111
BIRCH:				
Northeastern	2	1	*	*
Central Pine	..	*	1	1
Rainy River	..	..	..	..
Prairie & Hardwood	..	..	..	..
Total	2	1	1	1
PINE:[2]				
Northeastern	98	102	138	127
Central Pine	78	121	64	56
Rainy River	8	8	13	13
Prairie & Hardwood	10	8	10	9
Total	194	239	225	205
SPRUCE:				
Northeastern	115	108	146	131
Central Pine	47	45	42	35
Rainy River	119	65	67	70
Prairie & Hardwood	12	2	1	4
Total	293	220	256	240
TAMARACK:				
Northeastern	3	2	5	3
Central Pine	3	6	11	5
Rainy River	6	3	3	*
Prairie & Hardwood	1	..	..	*
Total	13	11	19	8
MISC. HARDWOODS:				
Northeastern	..	1	1	1
Central Pine	..	..	*	21
Rainy River	2	11	9	9
Prairie & Hardwood	..	..	..	3
Total	2	12	10	34
RESIDUE & CHIPS:				
Northeastern	..	..	..	..
Central Pine	..	..	..	..
Rainy River	..	..	..	..
Prairie & Hardwood	..	..	..	..
Total	..	..	..	..
ALL SPECIES:				
Northeastern	375	392	502	461
Central Pine	297	381	325	290
Rainy River	228	203	202	195
Prairie & Hardwood	37	18	19	22
State total	937	994	1,048	968

[1] *Data are not available for years 1953 through 1958.*

[2] *Includes small quantity of red pine and white pine.*

* *Less than 500 cords.*

WISCONSIN[1]

(Thousand standard cords, roughwood basis)

Species and district	Annual cut			
	1956	1959	1960	1961
ASPEN:				
Northeastern	243	206	281	280
Northwestern	171	172	212	203
Central	92	51	45	46
S.E. & S.W.	1	2	2	1
Total	507	431	540	530
BALSAM FIR:				
Northeastern	29	31	25	30
Northwestern	14	20	24	30
Central	2	1	1	1
S.E. & S.W.	..	*	..	*
Total	45	52	50	61
BIRCH:				
Northeastern	9	4	4	12
Northwestern	11	22	19	21
Central	1	*	4	1
S.E. & S.W.	*	..	..	*
Total	21	26	27	34
HEMLOCK:				
Northeastern	14	18	17	18
Northwestern	35	26	27	25
Central	7	5	8	4
S.E. & S.W.	..	..	..	*
Total	56	49	52	47
PINE:[2]				
Northeastern	26	47	38	42
Northwestern	39	56	53	35
Central	75	84	29	73
S.E. & S.W.	..	..	4	4
Total	140	187	124	154
SPRUCE:				
Northeastern	17	13	11	13
Northwestern	5	7	6	10
Central	1	1	1	*
S.E. & S.W.	..	..	..	..
Total	23	21	18	23
TAMARACK:				
Northeastern	2	4	4	2
Northwestern	2	3	2	5
Central	*	..	*	*
S.E. & S.W.	..	..	..	*
Total	4	7	6	7
MISC. HARDWOODS:				
Northeastern	61	53	73	52
Northwestern	49	58	63	67
Central	49	47	61	74
S.E. & S.W.	5	1	7	8
Total	164	159	204	201
RESIDUE & CHIPS:[3]				
Northeastern	..	18	13	9
Northwestern	..	13	10	7
Central	..	7	6	4
S.E. & S.W.	..	2	2	1
Total	([4])	40	31	21
ALL SPECIES:				
Northeastern	402	394	466	458
Northwestern	325	377	416	403
Central	227	196	155	203
S.E. & S.W.	6	5	15	14
State total	960	972	1,052	1,078

1 *Data are not available for years 1957 and 1958.*

2 *Includes small quantity of red pine and white pine.*

3 *Not reported by district; prorated on basis of 1956 lumber output.*

4 *Negligible.*

* *Less than 500 cords.*

MICHIGAN[1]

(Thousand standard cords, roughwood basis)

Species and district	Annual cut			
	1954	1959	1960	1961
ASPEN:				
E. ½ Up. Pen.	76	94	111	91
W. ½ Up. Pen.	145	142	173	168
N. ½ Low. Pen.	167	263	355	280
S. ½ Low. Pen.	16	24	30	19
Total	404	523	669	558
BALSAM FIR:				
E. ½ Up. Pen.	54	57	73	58
W. ½ Up. Pen.	81	45	55	48
N. ½ Low. Pen.	2	7	7	9
S. ½ Low. Pen.	..	..	..	..
Total	137	109	135	115
BIRCH:				
E. ½ Up. Pen.	3	3	3	6
W. ½ Up. Pen.	2	1	2	5
N. ½ Low. Pen.	..	..	4	5
S. ½ Low. Pen.	..	..	..	..
Total	5	4	9	16
HEMLOCK:				
E. ½ Up. Pen.	5	*	3	2
W. ½ Up. Pen.	57	39	43	42
N. ½ Low. Pen.	..	..	..	..
S. ½ Low. Pen.	..	..	..	..
Total	62	39	46	44
PINE:[2]				
E. ½ Up. Pen.	6	59	51	38
W. ½ Up. Pen.	1	33	22	13
N. ½ Low. Pen.	36	104	114	103
S. ½ Low. Pen.	*	1	1	2
Total	43	197	188	156

Species and district	Annual cut			
	1954	1959	1960	1961
SPRUCE:				
E. ½ Up. Pen.	46	37	52	45
W. ½ Up. Pen.	71	39	49	44
N. ½ Low. Pen.	2	7	7	7
S. ½ Low. Pen.	..	..	..	..
Total	119	83	108	96
TAMARACK:				
E. ½ Up. Pen.	*	*	2	2
W. ½ Up. Pen.	1	3	3	2
N. ½ Low. Pen.	..	..	..	..
S. ½ Low. Pen.	..	..	..	..
Total	1	3	5	4
MISC. HARDWOODS:				
E. ½ Up. Pen.	1	4	4	2
W. ½ Up. Pen.	2	51	43	37
N. ½ Low. Pen.	12	28	16	46
S. ½ Low. Pen.	11	7	12	11
Total	26	90	75	96
RESIDUE & CHIPS:				
E. ½ Up. Pen.	..	..	..	..
W. ½ Up. Pen.	..	5	2	21
N. ½ Low Pen.	..	..	..	..
S. ½ Low. Pen.	..	..	..	..
Total	(3)	5	2	21
ALL SPECIES:				
E. ½ Up. Pen.	191	254	299	249
W. ½ Up. Pen.	360	358	392	375
N. ½ Low. Pen.	219	409	503	450
S. ½ Low. Pen.	27	32	43	32
State total	797	1,053	1,237	1,106

1 *Not available for years 1955 through 1958.*

2 *Includes small quantity of red pine and white pine.*

3 *Negligible.*

* *Less than 500 cords.*

PULPWOOD PRODUCTION BY COUNTY AND SPECIES, 1961

MINNESOTA

(Thousand standard cords, roughwood basis)

District & county[1]	All species	Aspen	Balsam	Birch	Pine	Spruce	Tamarack	Misc. hdwds.	Residue & chips
NORTHEASTERN:									
Carlton	32	27	1	..	3	1	*	..	..
Cook	68	*	12	..	14	42	..	..	..
Lake	104	9	5	..	59	31	..	..	..
Pine	11	8	1	..	2	*	*	..	..
St. Louis	246	108	28	*	49	57	3	1	..
Total	461	152	47	*	127	131	3	1	..
CENTRAL PINE:									
Aitkin	35	27	2	..	2	2	1	1	..
Becker	6	3	1	..	1	*	..	1	..
Beltrami	66	30	12	*	9	10	2	3	..
Cass	38	15	3	1	11	2	1	5	..
Clearwater	29	16	2	*	2	2	*	7	..
Crow Wing	13	2	1	..	8	1	..	1	..
Hubbard	25	16	*	*	6	1	*	2	..
Itasca	76	28	14	*	15	17	1	1	..
Wadena	2	*	..	..	2	*	..	..	..
Total	290	137	35	1	56	35	5	21	..
RAINY RIVER:									
Koochiching	166	67	28	..	6	56	..	9	..
Lake of the Woods	29	7	1	..	7	14	..	*	..
Total	195	74	29	..	13	70	..	9	..
HARDWOOD:									
Benton	*	*	..	..	..	..	..	..	..
Kanabec	1	..	..	..	..	..	..	1	..
Mille Lacs	1	..	..	..	..	..	..	1	..
Morrison	1	..	*	..	1	*	..	..	..
Otter Tail	*	..	..	..	..	..	*	..	..
Scott	*	..	..	..	*	*	..	..	..
Todd	1	..	..	..	1	*	..	..	..
Total	4	*	*	..	2	*	*	2	..
PRAIRIE:									
Mahnomen	1	1	..	..	..	*	*	..	..
Pennington	1	1	..	..	..	..	..	*	..
Polk	3	1	..	..	..	1	..	1	..
Roseau	13	3	*	..	7	3	..	..	..
Total	18	6	*	..	7	4	*	1	..
State total	968	369	111	1	205	240	8	34	..

[1] *Includes only those counties that supplied pulpwood in 1961.*

* *Less than 500 cords.*

WISCONSIN

(Thousand standard cords, roughwood basis)

District & county[1]	All species	Aspen	Balsam	Birch	Hemlock	Pine	Spruce	Tamarack	Misc. hdwds.	Residue & chips[2]
NORTHEASTERN:										
Florence	22	14	2	*	3	1	1	*	1	..
Forest	48	35	7	1	2	*	2	*	1	..
Langlade	41	21	3	2	1	*	1	1	12	..
Lincoln	35	22	3	*	2	*	1	*	7	..
Marinette	68	40	5	2	3	12	3	*	3	..
Oconto	33	22	1	2	1	2	1	..	4	..
Oneida	122	71	6	3	3	22	4	1	12	..
Shawano	27	21	1	*	1	1	*	..	3	..
Vilas	53	34	2	2	2	4	*	*	9	..
Total	458	280	30	12	18	42	13	2	52	9
NORTHWESTERN:										
Ashland	53	29	12	2	4	1	2	*	3	..
Bayfield	42	25	3	2	7	4	1	*	*	..
Burnett	12	5	..	..	..	6	*	1	..	..
Douglas	47	27	*	3	*	14	2	1	*	..
Iron	19	11	3	1	3	*	1	*	*	..
Price	79	32	7	8	5	..	2	1	24	..
Rusk	27	16	*	*	*	..	*	*	11	..
Sawyer	34	17	3	5	3	1	1	1	3	..
Taylor	63	33	1	*	3	*	*	*	26	..
Washburn	20	8	1	*	*	9	1	1	*	..
Total	403	203	30	21	25	35	10	5	67	7
CENTRAL:										
Adams	34	1	..	..	..	20	..	..	13	..
Chippewa	7	7	..	..	*	*	..	..	..	..
Clark	9	6	*	*	*	1	..	..	2	..
Eau Claire	6	2	..	..	..	4	..	*	*	..
Jackson	25	4	*	*	..	17	*	..	4	..
Juneau	20	2	..	..	*	15	..	*	3	..
Marathon	45	12	1	1	4	1	*	*	26	..
Marquette	1	*	..	..	..	*	*	..	1	..
Monroe	11	1	..	..	..	8	*	*	2	..
Portage	12	2	*	..	*	2	*	..	8	..
Waupaca	7	5	*	*	*	*	*	..	2	..
Waushara	4	1	..	*	..	1	..	..	2	..
Wood	18	3	*	*	*	4	*	..	11	..
Total	203	46	1	1	4	73	*	*	74	4
SOUTHWESTERN:										
Barron	*	..	..	..	..	*	..	..	..	..
Dunn	1	*	..	..	..	1	..	..	..	..
Grant	3	..	..	..	..	*	..	..	3	..
Iowa	2	..	..	..	..	*	..	..	2	..
LaFayette	1	..	..	..	..	..	..	..	1	..
Polk	3	1	..	..	..	2	..	*	..	..
Richland	*	..	..	..	..	*	..	..	..	..
Sauk	*	*	..	..	..	..	..	..	..	..
Trempealeau	*	..	..	..	..	*	..	..	..	..
Total	11	1	..	..	..	3	..	*	6	1
SOUTHEASTERN:										
Brown	1	*	..	*	*	*	..	..	1	..
Calumet	1	..	..	*	..	..	..	..	1	..
Columbia	1	..	..	*	..	1	..	..	*	..
Dane	*	..	*	..	..	..	..	..	..	..
Door	*	*	*	*	*	..	..	..	*	..
Kewaunee	*	..	*	..	*	..	..	..	..	..
Outagamie	*	*	*	..	..	..	..	..	..	..
Total	3	*	*	*	*	1	..	..	2	*
State total	1,078	530	61	34	47	154	23	7	201	21

[1] *Includes only those counties that supplied pulpwood in 1961.*

[2] *County figures are not available.*

* *Less than 500 cords.*

MICHIGAN

(Thousand standard cords, roughwood basis)

District & County[1]	All species	Aspen	Balsam	Birch	Hemlock	Pine	Spruce	Tamarack	Misc. hdwds.	Residue & chips[2]
E. ½ UP. PEN.:										
Alger	19	*	7	..	..	7	5	*	..	..
Chippewa	24	3	5	*	*	7	7	2	..	..
Delta	48	24	12	2	*	4	5	*	1	..
Luce	27	3	5	*	*	9	10	*	..	..
Mackinac	19	2	9	1	1	3	3	..	..	..
Menominee	82	55	12	2	1	2	9	*	1	..
Schoolcraft	25	4	8	1	*	6	5	*	..	..
Total	244	91	58	6	2	38	45	2	2	..
W. ½ UP. PEN.										
Baraga	47	26	7	*	1	*	9	*	4	..
Dickinson	53	33	9	2	*	1	6	1	1	..
Gogebic	39	17	3	1	16	..	1	..	1	..
Houghton	31	15	2	*	11	*	1	*	2	..
Iron	58	38	7	1	3	*	7	1	1	..
Keweenaw	14	*	7	..	..	..	7	..	..	..
Marquette	57	19	12	1	..	12	13	..	*	..
Ontonagon	60	20	1	*	11	..	*	*	28	..
Total	380	168	48	5	42	13	44	2	37	21
N. ½ LOW. PEN.										
Alcona	36	28	1	1	..	2	1	..	3	..
Alpena	11	8	1	*	..	*	1	..	1	..
Antrim	*	*	..	..	..	..	..	..	..	..
Arenac	1	1	*	*	..	*	*	..	*	..
Benzie	5	5	..	*	..	*	..	..	1	..
Charlevoix	1	1	..	..	..	..	..	..	..	..
Cheboygan	12	6	2	*	..	2	2	..	*	..
Clare	20	20	..	*	..	*	..	..	*	..
Crawford	28	7	1	*	..	19	*	..	1	..
Emmett	*	*	..	..	..	..	..	..	*	..
Gladwin	2	2	..	*	..	*	..	..	*	..
Grand Traverse	6	5	..	*	..	1	..	..	*	..
Iosco	14	4	2	*	..	7	1	..	*	..
Kalkaska	10	6	*	*	..	4	*	..	*	..
Lake	23	10	..	*	..	9	..	..	4	..
Leelanau	1	1	..	*	..	..	..	..	*	..
Manistee	42	20	..	1	..	1	..	..	20	..
Mason	13	9	..	*	..	1	..	..	3	..
Mecosta	10	10	..	*	..	*	..	..	*	..
Midland	3	3	..	..	..	..	..	..	..	..
Missaukee	15	10	*	*	..	4	*	..	1	..
Montmorency	26	18	1	1	..	4	*	..	2	..
Newaygo	23	21	..	*	..	1	..	..	1	..
Oceana	7	6	..	*	..	1	..	..	*	..
Ogemaw	5	3	*	*	..	2	*	..	*	..
Osceola	25	20	..	*	..	1	..	..	4	..
Oscoda	54	18	*	1	..	34	1	..	*	..
Otsego	4	3	*	*	..	1	*	..	*	..
Presque Isle	16	11	1	1	..	1	1	..	1	..
Roscommon	17	11	*	*	..	6	..	..	*	..
Wexford	19	13	..	*	..	2	..	..	4	..
Total	450	280	9	5	..	103	7	..	46	..
S. ½ LOW. PEN.:										
Allegan	4	1	..	..	..	*	..	..	3	..
Barry	4	1	..	..	..	..	..	..	3	..
Bay	*	*	..	..	..	..	..	..	..	..
Berrien	1	*	..	..	..	..	..	..	1	..
Calhoun	*	*	..	..	..	..	..	..	*	..
Clinton	*	8	..	..	..	..	..	..	*	..
Eaton	1	1	..	..	..	..	..	..	*	..
Gratiot	1	1	..	..	..	..	..	..	..	..
Ingham	*	*	..	..	..	..	..	..	*	..
Ionia	*	*	..	..	..	..	..	..	*	..
Isabella	6	6	..	..	..	..	..	..	*	..
Jackson	*	*	..	..	..	..	..	..	*	..
Kalamazoo	1	*	..	..	..	*	..	..	1	..
Kent	1	*	..	..	..	*	..	..	1	..
Lapeer	4	3	..	..	..	..	..	..	1	..
Montcalm	3	3	..	..	..	..	..	..	*	..
Muskegon	1	*	..	..	..	1	..	..	..	..
Ottawa	1	*	..	..	..	1	..	..	..	..
St. Clair	1	1	..	..	..	..	..	..	*	..
Sanilac	*	*	..	..	..	..	..	..	..	..
Tuscola	1	1	..	..	..	..	..	..	..	..
Van Buren	2	1	..	..	..	..	..	..	1	..
Total	32	19	..	..	..	2	..	..	11	..
State total	1,106	558	115	16	44	156	96	4	96	21

[1] *Includes only those counties that supplied pulpwood in 1961.*

[2] *Residue and chips were used for pulpwood only in the western half of the Upper Peninsula. Data by counties for this area are not available.*

* *Less than 500 cords.*

TOTAL TIMBER CUT ESTIMATES FOR PRINCIPAL PULPWOOD SPECIES, 1961

The tables and charts on the following pages, unlike those in the preceding sections of this report, do not show pulpwood production. They show estimates of another Forest Survey statistic — timber cut — which is essentially the growing stock removed from the forest in logging for all products including pulpwood. The estimates, shown only for the principal pulpwood species, are based largely on reported production of pulpwood, the major component of the timber harvest in these species, and to a lesser extent on current trends in the harvest of other products.

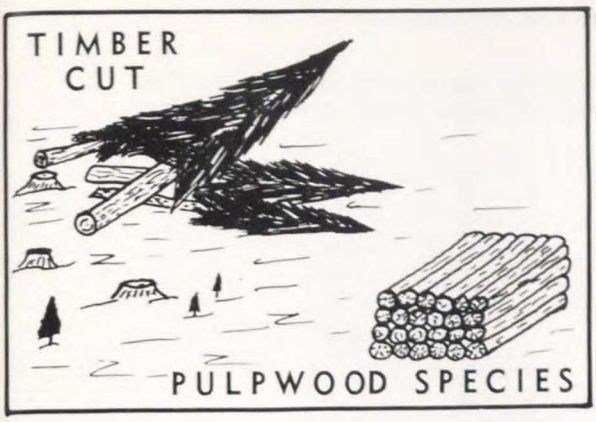
Accuracy of 1961 timber cut estimates varies by species. For spruce and balsam fir they are very reliable because pulpwood, for which there are current production figures, constitutes 95 percent of the harvest of these species. Good confidence can be placed on estimates for aspen, jack pine, and tamarack, in each of which pulpwood represents at least 70 percent of the cut. Hemlock estimates are less reliable because only about 45 percent of the hemlock cut is used for pulpwood.

Tables showing timber cut estimates for 1961 are followed by charts showing percentages of the 1960 estimate.

The 1961 cut of pulpwood species in Minnesota changed very little from that of 1960. The annual cut of aspen, balsam, and tamarack still falls short of the desirable level of cut in all districts. Larger cuts of jack pine and spruce are desirable in the northeastern counties.

In Wisconsin the timber harvest of pulpwood species was up slightly from the previous year. A larger volume of jack pine was harvested, especially in the Central district. This is a significant change. An increased rate of cutting in some counties such as Adams, Jackson, Juneau, and Monroe is an indication that more of the jack pine timber is being cut from local plantations. Timber from this source will increase materially in the years ahead. Larger cuts of aspen and miscellaneous dense hardwoods are desirable in all districts.

Michigan's timber harvest was less than that of a year ago, largely because of a smaller demand for aspen and jack pine especially in the east half of Upper Michigan and the north half of Lower Michigan. The changes in the overall cut of other species were of minor importance. Larger cuts of aspen, balsam, and hemlock are desirable especially in the east half of the Upper Peninsula and the north half of the Lower Peninsula.



1961 Cut by Species and Forest Survey District

Tables show approximate 1961 timber cut[1] for each of the principal pulpwood species by forest survey districts.

MINNESOTA

Species	State total	Forest survey district				
		North-eastern	Central Pine	Rainy River	Hardwood	Prairie
		(Thousand standard cords)				
Aspen	520	185	220	80	10	25
Balsam fir	130	55	45	30	*	*
Hemlock	..	..	..	..	..	..
Jack pine	275	145	100	15	5	10
Spruce	245	135	35	65	*	10
Tamarack	20	5	15	*	*	*
Total	1,190	525	415	190	15	45

WISCONSIN

Species	State total	Forest survey district				
		North-eastern	North-western	Central	South-western	South-eastern
		(Thousand standard cords)				
Aspen	720	340	290	80	10	*
Balsam fir	60	30	30	*	..	*
Hemlock	95	55	35	5	..	*
Jack pine	180	45	40	90	5	*
Spruce	20	10	10	*	..	..
Tamarack	15	5	10	*	*	*
Total	1,090	485	415	175	15	*

MICHIGAN

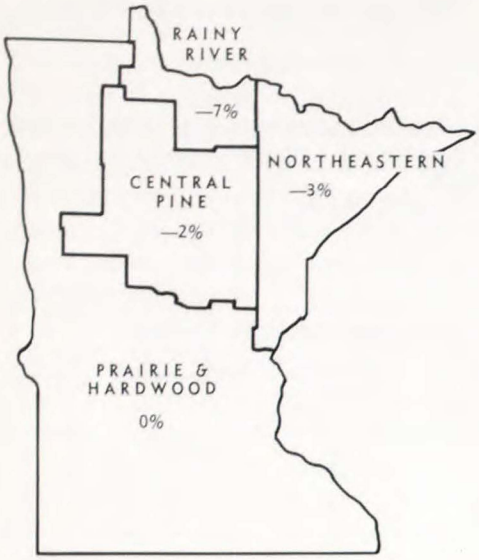
Species	State total	Forest survey district			
		E. ½ Upper Peninsula	W. ½ Upper Peninsula	N. ½ Lower Peninsula	S. ½ Lower Peninsula
		(Thousand standard cords)			
Aspen	645	115	190	315	25
Balsam fir	120	60	50	10	..
Hemlock	110	15	90	5	*
Jack pine	175	40	10	120	5
Spruce	100	45	45	10	..
Tamarack	10	5	5	*	..
Total	1,160	280	390	460	30

[1] Represents the sum of all timber products cut from sound wood in live merchantable timber plus logging residue.

* *Less than 2,500 cords.*

Percentage Change from 1960 by Species

Maps and charts show the percentage changes in the 1961 timber cut from the 1960 estimate for each principal pulpwood species by State and for all species by Forest Survey district.



MINNESOTA

Principal pulpwood species	Change from 1960 (percent)
Aspen	— 1
Balsam fir	—10
Jack pine	— 4
Spruce	0
Tamarack	—33
All species	— 3

WISCONSIN

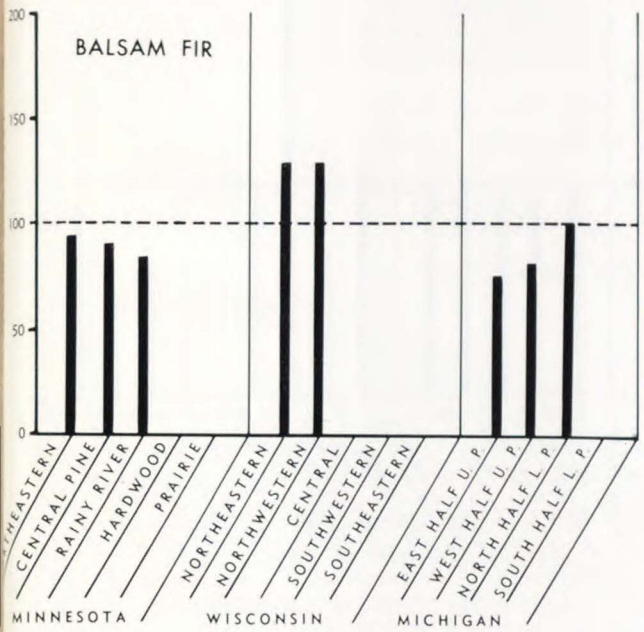
Principal pulpwood species	Change from 1960 (percent)
Aspen	— 1
Balsam fir	+20
Hemlock	0
Jack pine	+29
Spruce	+33
Tamarack	+50
All species	+ 5

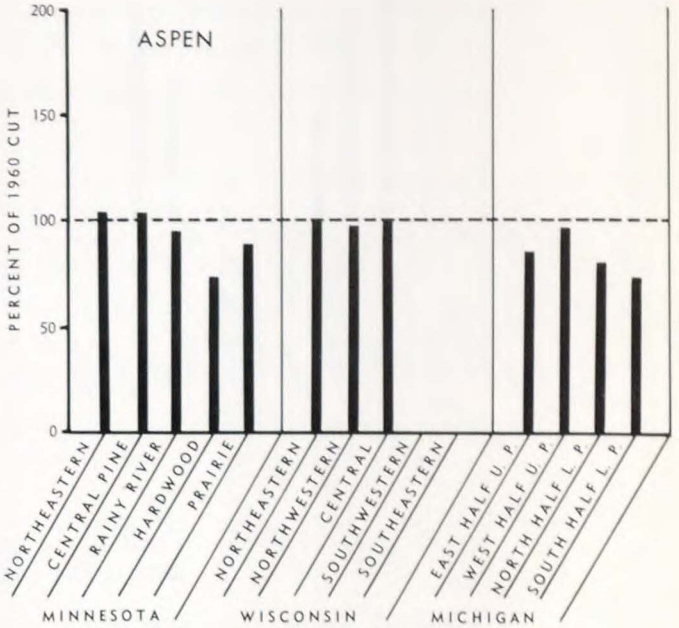
MICHIGAN

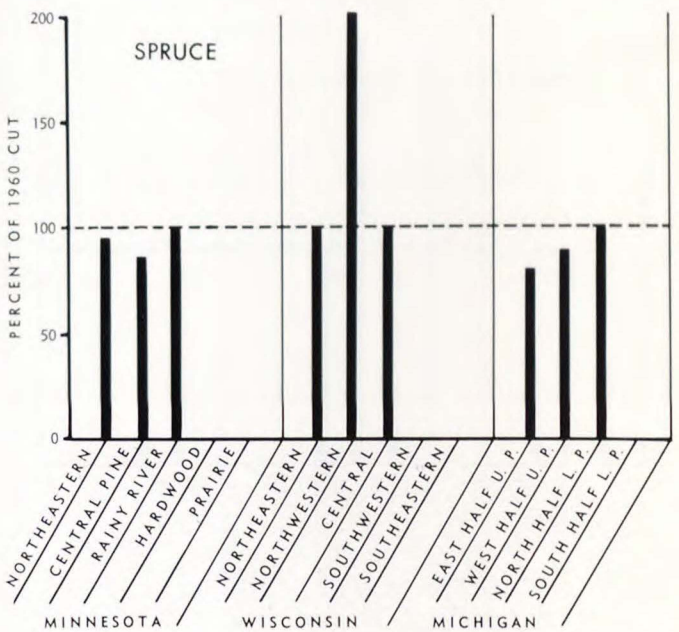
Principal pulpwood species	Change from 1960 (percent)
Aspen	—17
Balsam fir	—17
Hemlock	— 4
Jack pine	—17
Spruce	—13
Tamarack	—33
All species	—16

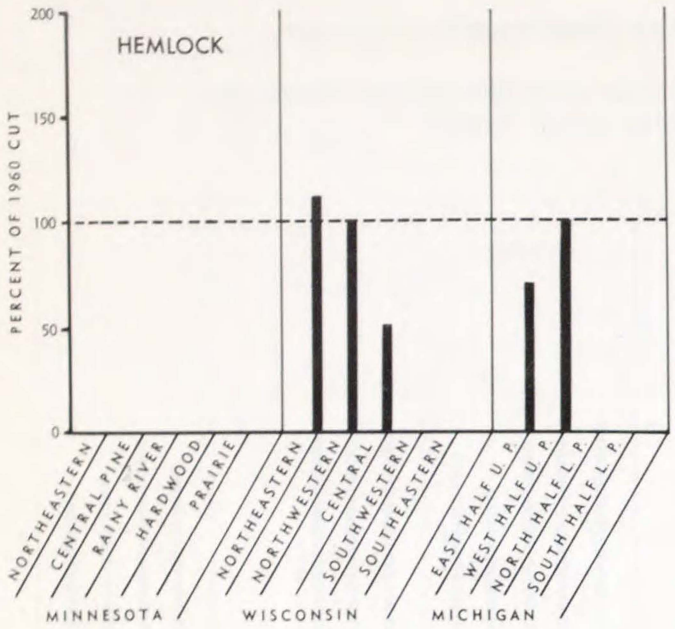
1961 Cut as a Percentage of 1960 Cut by Species and Survey District

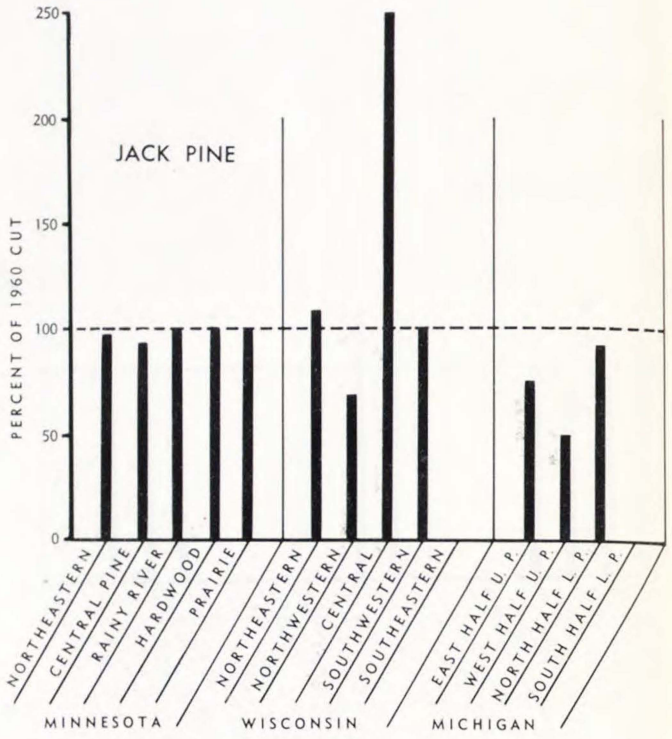
Charts show the 1961 timber cut as a percentage of the 1960 estimate for principal pulpwood species by Forest Survey district.

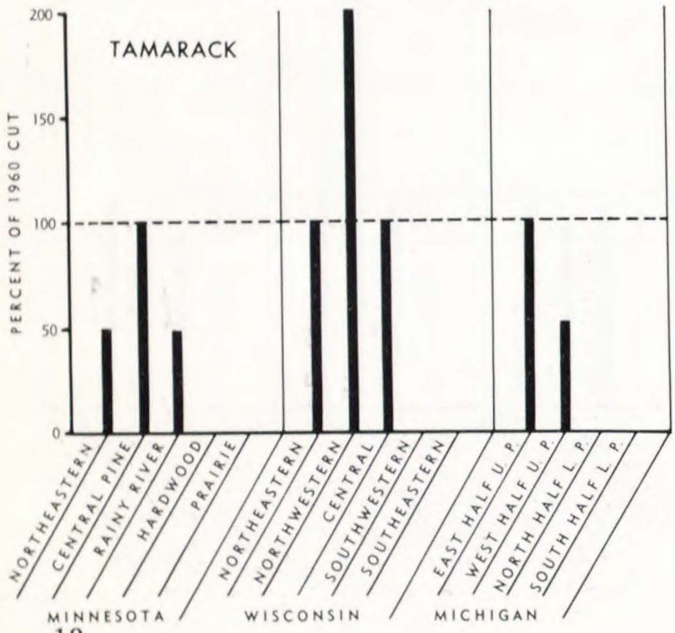







HEMLOCK
PERCENT OF 1960 CUT
200
150
100
50
0
NORTHEASTERN
CENTRAL PINE
RAINY RIVER
HARDWOOD
PRAIRIE
NORTHEASTERN
NORTHWESTERN
CENTRAL
SOUTHWESTERN
SOUTHEASTERN
EAST HALF U. P.
WEST HALF U. P.
NORTH HALF L. P.
SOUTH HALF L. P.
MINNESOTA
WISCONSIN
MICHIGAN


JACK PINE
PERCENT OF 1960 CUT
250
200
150
100
50
0
NORTHEASTERN
CENTRAL PINE
RAINY RIVER
HARDWOOD
PRAIRIE
NORTHEASTERN
NORTHWESTERN
CENTRAL
SOUTHWESTERN
SOUTHEASTERN
EAST HALF U. P.
WEST HALF U. P.
NORTH HALF L. P.
SOUTH HALF L. P.
MINNESOTA
WISCONSIN
MICHIGAN


TAMARACK
PERCENT OF 1960 CUT
200
150
100
50
0
NORTHEASTERN
CENTRAL PINE
RAINY RIVER
HARDWOOD
PRAIRIE
NORTHEASTERN
NORTHWESTERN
CENTRAL
SOUTHWESTERN
SOUTHEASTERN
EAST HALF U. P.
WEST HALF U. P.
NORTH HALF L. P.
SOUTH HALF L. P.
MINNESOTA
WISCONSIN
MICHIGAN

SOME RECENT STATION PAPERS

LAKE STATES FOREST EXPERIMENT STATION

Forest Recreation in the Upper Great Lakes Area: Proceedings of a Seminar on Research Needs, May 11-13, 1961. Sta. Paper 89, 104 pp., illus. 1961.

Wisconsin's Forest Resources, by Robert N. Stone and Harry W. Thorne. Sta. Paper 90, 52 pp., illus. 1961.

Field Calibration of a Neutron-Scattering Soil Moisture Meter, by Richard S. Sartz and Willie R. Curtis. Sta. Paper 91, 15 pp., illus. 1961.

Growing White Pine in the Lake States to Avoid Blister Rust, by Eugene P. Van Arsdel. Sta. Paper 92, 11 pp., illus. 1961.

Farm Lumber Consumption and Use Data: Needs and Methods of Estimating, by Allen L. Lundgren and Ronald I. Beazley. Sta. Paper 93, 20 pp., illus. 1961.

Small Private Forest Landowners in Michigan's Upper Peninsula — Characteristics, Ownership Attitudes, and Forestry Practices, by Dean N. Quinney. Sta. Paper 95, 20 pp., illus. 1962.

Contracting for Forest Aerial Photography in the United States, by Gene Avery and Merle P. Meyer. Sta. Paper 96, 37 pp., illus. 1962.

Three Pine Release Experiments in Northern Minnesota, by Robert E. Buckman and Allen L. Lundgren. Sta. Paper 97, 9 pp., illus. 1962.

Proceedings of the Fifth Lake States Forest Tree Improvement Conference. Sta. Paper 98, 42 pp., 1962.

Three Growing Stock Density Experiments in Minnesota Red Pine — a Progress Report, by Robert E. Buckman. Sta. Paper 99, 10 pp., illus. 1962.

Identification of Conifer Insects by Type of Tree Injury, Lake States, by H. J. MacAloney and D. C. Schmiege. Sta. Paper 100, 41 pp., illus. 1962.

Forest Insects and Diseases in the Northern Great Plains: A Survey, by L. F. Wilson. Sta. Paper 101, 28 pp., illus. 1962.

Forest Plantations of Northern Lower Michigan, by Robert N. Stone and Clarence D. Chase. Sta. Paper 102, 31 pp., illus. 1962.

Private Forest Landownership in the Urban Fringe Area of Michigan, by Con H Schallau. Sta. Paper 103, 17 pp., illus. 1962.

Growth Through Agricultural Progress